

Quantitative Usage Analysis for Chlorpyrifos

Case Number: 0100 PC Code: 59101

Date: 9/27/99 Analyst: Tim Kiely

Based on available pesticide survey usage information for the years of 1987 through 1998, an annual estimate of chlorpyrifos' total domestic usage is approximately 20,960,000 pounds active ingredient (a.i.) for 8,027,000 acres treated. Most of the acreage is treated with 2.3 pounds a.i. or less per application and 3.9 pounds a.i. or less per year. Chlorpyrifos is an insecticide with its largest agricultural market in terms of total pounds a.i. allocated to corn (26%). No other crop is treated with more than 3% of the total pounds of chlorpyrifos applied. The largest non-agricultural markets in terms of total pounds of a.i. applied are PCOs, termite control (24%) and turf (12%). Crops with a high percentage of their total U.S. planted acres treated include brussels sprouts (73%), cranberries (46%), apples (44%), broccoli (41%), and cauliflower (31%).

This quantitative usage analysis updates estimates provided in an earlier BEAD usage profile (Grube, 12/96).

U.S. EPA, Quantitative Usage Analysis, Chlorpyrifos, November 24, 1998 (last revised September, 27 1999).

Site	Acres Grown (000)	Acres Treated (000)		% of Crop Treated		LB AI Applied (000)		Average Application Rate			States of Most Usage
		Wtd Avg	Est Max	Wtd Avg	Est Max	Wtd Avg	Est Max	lb ai/ acre/yr	#appl / yr	lb ai/ A/appl	(% of total lb ai used on this site)
Cranberries	35	16	21	46%	60%	26	34	1.63	1.0	1.63	MA NJ WI 94%
Strawberries	50	3	6	6%	12%	8	15	2.53	1.1	2.27	CA NC OR MD MI NY 79%
Citrus, Other /1	51	8	16	16%	32%	12	25	1.48	1.2	1.19	FL CA 81%
Grapefruit	194	23	32	12%	16%	44	65	1.91	1.4	1.35	FL TX 82%
Lemons	63	19	27	30%	43%	55	72	2.89	1.3	2.23	CA AZ 99%
Oranges	867	118	165	14%	19%	460	578	3.90	1.3	2.90	CA FL 96%
Apples	572	251	305	44%	53%	550	750	2.19	1.6	1.41	WA MI NY CA VT NC 77%
Figs	16	0*	0*	0%	0%	0*	0*	-	-	-	
Pears	78	10	18	13%	23%	19	37	1.77	1.1	1.68	WA OR CA MI 83%
Nectarines	38	3	4	8%	11%	5	7	1.69	1.0	1.69	
Cherries	128	18	25	14%	19%	34	60	1.85	1.2	1.59	MI OR WA 86%
Peaches	212	23	37	11%	17%	41	52	1.78	1.4	1.25	CA SC GA NJ TX OK 62%
Plums & Prunes	140	7	9	5%	6%	11	20	1.57	1.1	1.47	CA WA OR 82%

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Grapes	825	4	6	0%	1%	4	8	0.99	1.1	0.93	AR OH WA MI NC FL 68%
Almonds	429	88	124	20%	29%	185	270	2.10	1.2	1.82	CA 100%
Pecans	488	143	174	29%	36%	240	414	1.68	1.9	0.88	TX GA LA OK 85%
Walnuts	205	62	80	30%	39%	197	230	3.18	1.5	2.09	CA 100%
Nut Trees, Other /2	100	6	9	6%	9%	7	18	1.17	1.2	0.96	
Onions	152	20	29	13%	19%	24	35	1.20	1.0	1.20	OR NY MI NM GA CA 86%
Peppers, Bell	65	1	2	2%	3%	4	8	4.00	3.2	1.25	FL 100%
Kale	6	0	0	0%	0%	0	0	1.00	1.0	1.00	
Mustard	-	-	-	-	-	-	-	-	-	-	
Broccoli	111	45	57	41%	51%	73	87	1.62	1.4	1.19	CA 82%
Brussels Sprouts	3	2	3	73%	91%	9	13	3.75	3.5	1.07	CA 100%
Cabbage	85	11	20	13%	23%	10	22	0.91	1.0	0.91	CA FL GA TX WA NY 77%
Cabbage, Chinese	9	0	0	0%	0%	0	0	1.00	1.0	1.00	

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Cauliflower	58	18	21	31%	36%	27	38	1.50	1.7	0.87	CA AZ 82%
Collards	11	1	2	12%	13%	1	1	0.42	1.0	0.42	FL AZ NJ 84%
Kohlrabi	-	-	-	-	-	-	-	-	-	-	
Broccoli raab	-	-	-	-	-	-	-	-	-	-	
Cucurbits /3	285	1	3	0%	1%	1	6	1.00	1.4	0.70	NC MI FL CA AZ IA 82%
Asparagus	89	6	11	7%	12%	5	9	0.83	1.0	0.83	WA MI 82%
Roots/Tubers /4	244	33	46	14%	19%	74	86	2.24	1.1	1.96	NC CA MS LA 83%
Sweet Corn	784	86	105	11%	13%	120	192	1.40	1.4	1.03	FL WA WI MN OR NY 69%
Tomatoes	500	11	16	2%	3%	35	53	3.18	3.1	1.01	FL 90%
Lentils	131	-	-	-	-	-	-	-	-	-	
Beans/Peas, Green	723	2	4	0%	1%	2	4	1.00	1.0	0.99	OR MD IL WI 87%
Beans/Peas, Dry	2,181	4	6	0%	0%	4	7	1.00	1.0	0.97	MI ND MN CO IL 83%

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Sorghum	11,280	210	349	2%	3%	148	239	0.70	1.1	0.62	TX MS KS OK NE LA 76%
Corn	71,264	4,678	6,053	7%	8%	5,527	6,949	1.18	1.1	1.10	IL IA NE IN WI OH 71%
Rice	2,921	1	7	0%	0%	3	14	3.34	1.0	3.34	LA AR 81%
Tobacco	695	73	96	11%	14%	146	197	2.00	1.0	1.96	NC SC VA GA 81%
Wheat, Spring	20,799	29	100	0%	0%	35	90	0.39	1.0	0.39	ND MN 92%
Wheat, Winter	43,282	250	400	1%	1%	170	350	0.54	1.2	0.47	TX CO KS WY MT NM 84%
Alfalfa	23,949	675	835	3%	3%	480	700	0.71	1.1	0.67	CA PA MO IL KS CO 55%
Peanuts	1,610	158	240	10%	15%	316	480	2.00	1.1	1.81	GA NC VA AL 85%
Soybeans	61,279	90	150	0%	0%	60	91	0.67	1.0	0.67	IL IA OH SD IN NE 53%
Sunflower	2,745	7	13	0%	0%	5	8	0.71	1.1	0.65	MN CO CA KS 81%

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Cotton	12,429	645	806	5%	6%	670	890	1.04	1.7	0.63	AZ MS CA TX LA 84%
Sugar Beets	1,415	118	146	8%	10%	160	307	1.36	1.5	0.88	CA ND MN 86%
Mint	154	29	42	19%	27%	41	66	1.41	1.0	1.41	OR ID IN WA 92%
Bananas	See Below	-	-	-	-	-	-	-	-	-	
Lots/Farmsteads/etc	24,815	7	14	0%	0%	10	16	1.43	2.2	0.66	FL OK GA KS MS IA 60%
Pasture	86,960	7	12	0%	0%	9	19	1.20	1.6	0.73	TX FL CA 83%
Woodland	62,825	5	9	0%	0%	8	17	1.52	1.6	0.95	GA PA TX FL MI 83%
Nursery/Greenhouse	-	-	-	-	-	277	567	-	-	-	
PCOs, Termite Control /5	-	-	-	-	-	5,003	6,000	-	-	-	

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PCOs, other /6	-	-	-	-	-	1,946	3,000	-	-	-	
MADs /7	-	-	-	-	-	29	50	-	-	-	
Turf /8	-	-	-	-	-	2,519	3,000	-	-	-	
Households, Outdoor	-	-	-	-	-	1,112	1,500	-	-	-	
Total, U.S.		8,027	9,341			20,960	24,363				
	Millions of Tons										
	Imported	Treated		% Treated							
		Avg	Max	Avg	Max						
Bananas /9	3	0.4	0.5	13%	14%						

COLUMN HEADINGS

Wtd Avg = Weighted average--the most recent years and more reliable data are weighted more heavily.

Est Max = Estimated maximum, which is estimated from available data.

Average application rates are calculated from the weighted averages.

NOTES ON TABLE DATA

Usage data primarily covers 1987 - 1998. Calculations of the above numbers may not appear to agree because they are displayed as rounded to the nearest 1000 for acres treated or lb. a.i. (Therefore 0 = < 500)

to the nearest whole percentage point for % of crop treated. (Therefore 0% = < 0.5%)

0* = Available EPA sources indicate that no usage is observed in the reported data for this site,
which implies that there is little or no usage.

A dash (-) indicates that information on this site is NOT available in EPA sources or is insufficient.

/1 Citrus, Other includes kumquats, limes, tangelos, and tangerines.

/2 Nut Trees, Other includes chestnuts, filberts (hazelnuts), and macadamia nuts.

/3 Cucurbits includes cucumber, and pumpkin.

/4 Root and Tuber Crops include carrots, radish, rutabagas, sweet potatoes, and turnips.

/5 PCOs, Termite Control: pest control operators, termite control.

/6 PCOs, Other includes use for control of cockroaches, ants, fleas, and other general pests.

/7 MADs: mosquito abatement districts.

/8 Turf includes golf courses, turf farms, institutional turf, lawncare control operators, and landscape contractors.

/9 The estimates for bananas are based on import data. The two countries indicating a use of chlorpyrifos are Columbia and Honduras.

SOURCES:

EPA proprietary data (Doane Marketing Research, Kline Professional Markets for Pesticides and Fertilizers, Maritz Marketing Research, Mike Buckley and Associates),

National Center for Food and Agricultural Policy,

USDA, NASS, ERS, Agriculture Chemical Usage: Vegetable Summary (1996, 1994),

USDA, NASS, ERS, Agriculture Chemical Usage: Fruits Summary (1997, 1995),

USDA, NASS, ERS, Agriculture Chemical Usage: Field Crops Summary (1997, 1996).

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